

We claim:

1. A method of image watermark decoding in a printing or scanning process comprising:

intercepting portions of an image as the portions pass from one stage of the printing or scanning process to another;

performing a watermark decoding operation on each portion; and

providing a result of the decoding operation before the printing or scanning process has completed for the image.

2. The method of claim 1 wherein the image portions are sequential image portions, and all decoding operations on one portion are initiated before any watermark decoding operations are initiated on a subsequent portion in a sequential data stream of the sequential image portions.

3. The method of claim 1 wherein the watermark decoding operation is performed in a printer driver executing in a computer as an image is being passed from an application program to a printer through the driver.

4. The method of claim 3 wherein the printer driver includes 16 bit code, the watermark operation is implemented in 32 bit code, and the watermark operation is invoked from the 16 bit code through an application programming interface of the 32 bit code.

5. The method of claim 4 wherein the 16 bit code passes image data to the 32 bit code over a 16 to 32 bit bridge, and the bridge includes code enabling the 32 bit code to access data structures in the 16 bit code.

6. The method of claim 1 wherein the portions are buffered, and analyzed to select blocks for watermark detection operations.

7. The method of claim 6 wherein the analysis of the blocks in the buffer includes identifying potentially overlapping blocks that are likely to include a watermark signal.

5 8. The method of claim 1 wherein the result of the decoding operation is used to trigger an action before printing or scanning of the image is complete.

9. The method of claim 8 wherein the action includes stopping the printing or scanning of the image.

10 10. The method of claim 8 wherein the action includes using information in the watermark to index related information about the image in a database.

11. The method of claim 8 wherein the action includes using information in the watermark to fetch a web page related to the image.

12. A computer readable medium on which is stored software for performing the method of claim 1.

20 13. An imaging system comprising:  
an imaging device for scanning or printing an image;  
a watermark decoder in communication with the imaging device for intercepting portions of an image as the portions pass from one stage of a printing or scanning process to another, for performing a watermark decoding operation on each portion; and for  
25 providing a result of the decoding operation before the printing or scanning process has completed.

14. The system of claim 13 including a printer peripheral in communication with a computer, and a printer driver executing in the computer and incorporating the watermark decoder.

15. The system of claim 13 including a scanner peripheral in communication with a computer, and a scanner driver executing in the computer and incorporating the watermark decoder.

16. A method of image watermark encoding in a printing process comprising:  
intercepting portions of an image as the portions pass from one stage of a printing process to another;  
performing a watermark encoding operation on each portion; and  
providing watermarked portions of the image to a subsequent stage in the printing process.

17. The method of claim 16 including encoding tracer data into the image.

18. The method of claim 17 including encoding tracer data into the image in response to detecting a watermark in the image.

19. The method of claim 16 including encoding calibration data into the image that is operable to detect a watermark in a geometrically distorted version of the watermarked image.

20. A computer readable medium having software for performing the method of claim 16.